

ditrimethylolethane or a tetrafunctional  
central group of the general formula I



5 in which the indices and variables have the  
following definitions:

$m + n + o + p = 4$ ; where

m is an integer from 1 to 3, and

10 n, o and p are 0 or an integer from 1 to 3;

q, r, s and t are an integer from 1 to 5,  
where  $q \geq r, s, t$ , especially  $q > r, s, t$ ;

15 X is -O-, -S- or -NH-;

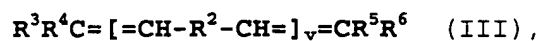
A is  $-CR_2-$ ; where

R is -H, -F, -Cl, -Br, -CN, -NO<sub>2</sub>,  
C<sub>1</sub>-C<sub>3</sub> alkyl or haloalkyl or C<sub>1</sub>-C<sub>3</sub>  
20 alkoxy radical or, if q, r, s  
and/or t are at least 2, R is a  
C<sub>2</sub>-C<sub>4</sub> alkanediyl and/or  
oxaalkanediyl radical having 2  
to 5 carbon atoms and/or an  
25 oxygen atom -O- which bridges  
from 3 to 5 carbon atoms of the  
radical -A-;

(ii) cyclic and/or acyclic C<sub>9</sub>-C<sub>16</sub> alkanes

functionalized with at least two hydroxyl groups or at least one hydroxyl group and at least one thiol group;

- 5 (iii) polyols obtainable by hydroformylating oligomers of the formula III,

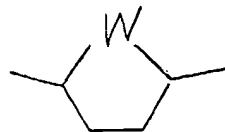


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in which  $R^2$  is  $-(-CH_2-)_w-$ ,

in which the index  $w$  is an integer from 1 to 6, or

=



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in which  $W$  is  $-CH_2-$  or an oxygen atom;

$R^3$ ,  $R^4$ ,  $R^5$  and  $R^6$  independently of one another are hydrogen atoms or alkyl; and

20

the index  $v$  is an integer from 1 to 15.

5. A liquid composition or a homopolymer or copolymer as claimed in claim 4, wherein

25

- the polyols (I) used comprise a hyperbranched compound obtainable by reacting 2,2-

bishydroxymethylbutane-1,4-diol with phthalic anhydride and then reacting the resultant intermediate with glycidyl esters of tertiary, highly branched, saturated monocarboxylic acids,

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- the polyols (ii) used comprise dialkyloctanediols, especially diethyloctanediols, and

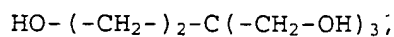
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- the polyols (iii) used comprise hydroformylated and hydrogenated oligomers, obtainable by metathesis from acyclic monoolefins and cyclic monoolefins, hydroformylation of the resultant oligomers and subsequent hydrogenation, the
- 15 cyclic monoolefin used comprising cyclopentene and the acyclic monoolefins used comprising hydrocarbon mixtures obtained in petroleum processing by cracking ( $C_5$  cut), and the
- 20 polyols (iii) having a hydroxyl number (OHN) of from 200 to 650, in particular from 250 to 450, a number-average molecular weight  $M_n$  of from 400 to 1 000, in particular from 400 to 600, a mass-average molecular weight  $M_w$  in the range
- 25 from 600 to 2 000, in particular from 600 to 1 100, and a polydispersity  $M_n/M_w$  from 1.4 to 3, in particular from 1.7 to 1.9.

6. A liquid composition or a homopolymer or copolymer

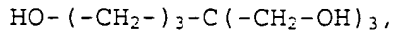
as claimed in claim 3, wherein the reactive diluents containing epoxide groups comprise

(iv) glycidyl ethers of polyols or polyphenols  
5 such as glycerol, diglycerol, glucitol, erythritol, pentaerythritol, dipentaerythritol, trimethylolpropane, trimethylolethane, ditrimethylolpropane, ditrimethylolethane, tetrakis(2-hydroxyethyl)ethane, tetrakis(3-  
10 hydroxypropyl)methane, the tetraols II1 to II10:



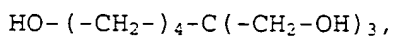
(II1)

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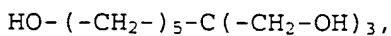


(II2)

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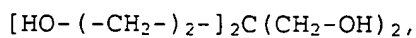


(II3)

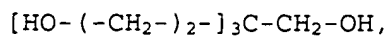


(II4)

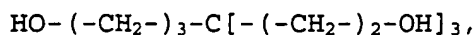
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(II5)

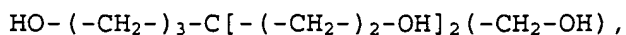


(II6)

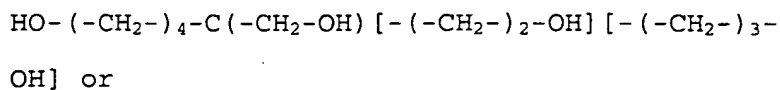


(II7)

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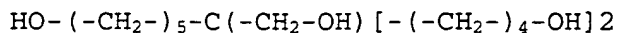


(II8)



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(II9)



(II10);

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the polyols (i), (ii) and (iii),  
pyrocatechol, resorcinol, hydroquinone,  
pyrogallol, phloroglucinol, (p-hydroxy-  
phenyl)phloroglucinol, 5-(7-hydroxynaphth-1-  
yl)pyrogallol, bisphenol F, bisphenol A or  
20 novolaks;

20

(v) low molecular mass epoxy resins or oligomers  
which contain glycidyl-containing monomers  
(A6) in copolymerized form;

25

(vi) glycidyl esters of Versatic® acid;

(vii) epoxy resin esters of saturated and  
unsaturated fatty acids (epoxidized oils);

and/or

(viii) epoxidized triglycerides of natural oils and esters.

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7. A liquid composition as claimed in any of claims 1 or 3 to 6 or a homopolymer or copolymer as claimed in any of claims 2 to 6, preparable by homopolymerization or copolymerization of  
10 olefinically unsaturated monomers in a Taylor reactor having an external reactor wall located within which there is a concentrically or eccentrically disposed rotor, a reactor floor and a reactor lid, which together define the annular  
15 reactor volume, at least one means for metered addition of reactants, and a means for the discharge of product, where the reactor wall and/or the rotor are or is geometrically designed in such a way that the conditions for Taylor  
20 vortex flow are met over substantially the entire reactor length in the reactor volume, i.e. in such a way that the annular gap broadens in the direction of flow traversal.

25 8. A process for preparing a liquid composition or a homopolymer or copolymer of olefinically unsaturated compounds by free-radical (co)polymerization in a liquid reaction medium, which comprises using reactive diluents for

thermally curable multisubstance mixtures as the reaction medium.

9. The process as claimed in claim 8, wherein a  
5 fraction of the reactive diluents is modified after the (co)polymerization with olefinically unsaturated compounds, especially with monomers (A2), (A5) and/or (A6), so that the resulting liquid composition is curable both thermally and  
10 by actinic light and/or electron beams.
10. The process as claimed in claim 8 or 9, conducted in a Taylor reactor having an external reactor wall located within which there is a  
15 concentrically or eccentrically disposed rotor, a reactor floor and a reactor lid, which together define the annular reactor volume, at least one means for metered addition of reactants, and a means for the discharge of product, where the  
20 reactor wall and/or the rotor are or is geometrically designed in such a way that the conditions for Taylor vortex flow are met over substantially the entire reactor length in the reactor volume, i.e. in such a way that the  
25 annular gap broadens in the direction of flow traversal.
11. The use of a liquid composition as claimed in any of claims 1 and 3 to 7, of a homopolymer or

5 copolymer as claimed in any of claims 2 to 7 or of  
a liquid composition or homopolymer or copolymer  
prepared as claimed in any of claims 8 to 10 to  
prepare coating compositions, adhesives or sealing  
compounds curable thermally or curable thermally  
and with actinic light and/or electron beams.